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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,196	08/22/2003	Yiliang Wu	D/A2543	9008

25453 7590 12/21/2005

PATENT DOCUMENTATION CENTER  
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EXAMINER

ZEMEL, IRINA SOPJIA

ART UNIT PAPER NUMBER

1711

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/646,196

Applicant(s)

WU ET AL.

Examiner

Irina S. Zemel

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-8 and 10-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25 is/are allowed.
- 6) ☐ Claim(s) 1,2, 4-6, 10-13 is/are rejected.
- 7) ☐ Claim(s) 7,8 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 4-9, 8- 25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-37 of U.S. Patent No. 6,897,284. Although the conflicting claims are not identical, they are not patentably distinct from each other because the device claimed in the earlier filed patent ' 284 contains polymers with repeat units (I), (II), and the D linking group (as defined in the claims of the '284 patent or exemplified, for example, in formulas 9, -12 of claim 19) that fully correspond to the polymers of claims of the instant application, thus making the polymers claimed in the instant application clearly obvious over the claimed device containing the same polymers.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,2, 3-6, 10-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 20030144466 A1 to et al., (hereinafter "Ong '466).

The reference discloses thienylene-arylene copolymers comprising substituted and unsubstituted 2,5-thienylene units and arylene units. See, for example, formulas 7-13 on pages 3-4. The reference requires the presence of di-substituted thiophene groups, while the claimed invention limits the units to monosubstituted thiophenes. However, the references expressly discloses that substituents on the thiophene ring can be alkyl groups with number of carbon atoms as low as 1. See [0019], thus making the disclosed units and the claimed units close homologues. Thus, use of a close monosubstituted close homologue of the disclosed di-sibstituted thiophene would have been obvious. Further, the reference does not explicitly disclose alkyl substituted arylenes, however, any alkyl substituted arylene units would have been obvious from the genus of arylene compounds and from explicitly exemplified (in the formula) unsubstituted arylene compounds because of their close structural similarity with

expectation that alkyl substituted arylenes will have similar properties or differences in the properties would be expected homologue differences. See *In re Papesch*, 315 F.2d 381. Each of the claims listed above is directed to polymers comprising alkyl substituted arylene units (or has at least one formula within a claim with alkylene substituted arylenes only). Therefore, the invention as claimed in the above listed claims would have been obvious from the disclosure of the Ong '466 reference.

Claims 1,2, 3-6, 10-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1327647 to Xerox Corporation., (hereinafter "Xerox").

The reference discloses thienylene-arylene copolymers comprising substituted (I) and unsubstituted 2,5-thienylene units (II, since B can be H), and arylene units (D). The reference does not expressly disclose alkyl substituted arylenes, however, any alkyl substituted arylene units would have been obvious from the genus of arylene compounds and from explicitly exemplified (in the formula) unsubstituted arylene compounds because of their close structural similarity with expectation that alkyl substituted arylenes will have similar properties or differences in the properties would be expected homologue differences. See *In re Papesch*, 315 F.2d 381. Each of the claims listed above is directed to polymers comprising alkyl substituted arylene units (or has at least one formula within a claim with alkylene substituted arylenes only). Therefore, the invention as claimed in the above listed claims would have been obvious from the disclosure of the Xerox reference.

***Allowable Subject Matter***

Claims 7, 8, 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the references that constitute valid prior art references of record disclose or fairly suggest a thionylene-arylene polymers containing claimed thiophene units and containing a repeat unit consisting of at least one dialkoxysubstituted arylene unit.

Claim 25 is allowed. None of the prior art references of record disclose a thionylene-arylene polymers presented by the claimed formula (20) and containing a repeat unit consisting of one dialkoxysubstituted arylene unit and two unsubstituted 2,5-thienylene units.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irina S. Zemel  
Examiner  
Art Unit 1711

A handwritten signature in black ink, appearing to read 'Irina Zemel', written in a cursive style.

ISZ